

Jim Dra

New Earth

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Resources**

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November 8, 1979

Mr. Edward L. Marek
Manager Region II
Field Operations Section
Environmental Protection Agency
1701 S. First Street
Maywood, IL 60153

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ILL. ENVIRONMENTAL PROTECTION AGENCY

NOV 13 1979

DIV. WATER POLLUTION CONTROL
FIELD OPERATIONS SECTION - Rm. 2

Dear Mr. Marek:

This is in response to your letter of October 23, 1979, in which you requested our opinion as to whether leachate generated from the sludge storage lagoons at the MSD Lawndale Avenue Treatment Plant could migrate from the lagoons and enter ground and/or surface waters. The disposal lagoons are located in Sections 14, 22, 23, and 27 in T. 38 N., R. 12 E., Cook County. They have been constructed in the center of the Des Plaines River Valley and the river lies immediately northwest of them, while the Chicago Sanitary and Ship Canal is immediately to the southeast.

Well logs, engineering borings, and maps in the files of the Illinois Geological Survey indicate that there is 25 to 40 feet of unconsolidated glacial material filling the Des Plaines River Valley in this area. The glacial material is underlain by Silurian dolomite bedrock. The unconsolidated glacial deposits are primarily alluvial in origin and consist largely of fine-grained clayey silts and silty, sandy clays. All of these materials are logged in engineering borings as being stiff and dense. In addition, some sand, gravel, and boulder beds, with silty clay forming the binder material, were encountered in some of the borings. Several of the deepest borings encountered either 5 to 10 feet of sand and gravel at the base of the drift, or silty clay Wadsworth till directly overlying the bedrock.

We have record of approximately 20 wells that have been drilled within one mile of the disposal lagoons. About a dozen of these wells are located on the Corn Products Refining Company property in Section 23, about one-half mile east of the lagoons and east of the Sanitary and Ship Canal. All of the Corn Products wells utilize the deep sandstone aquifers for water supply and are at least 1500 feet deep. One other 1500 foot sandstone well is located near the center of Section 21, approximately one mile west of the lagoons. In addition, we have record of 7 Silurian dolomite wells within one mile of the disposal facility. All but one of these are located northeast of the lagoons in Sections 15, 16, and 21, and they range in depth from 155 to 390 feet. We do not know if all of these wells are still in use, or if some have been abandoned.

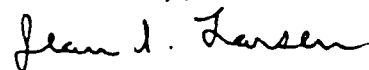
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State of Illinois

As the Des Plaines River forms both the local and regional ground-water discharge zone in the area, we are reasonably certain that all ground water in the shallow Silurian bedrock and in the glacial drift is moving towards the river, both southeast and the northwest of the valley. This movement towards the discharge zone through both the dolomite and the drift is predominantly lateral, but, beneath the floor of the valley there is an upward component of ground-water movement discharging ground water into the river. As the natural direction of both regional and local ground-water movement thus is directly towards the site of the disposal lagoons in the center of the valley, and leachate is always carried with the flow of ground water, there is no opportunity for migration out of the sludge lagoons into the surrounding ground water. Only heavy pumping of the Silurian dolomite in the area could possibly alter or reverse this natural flow and present pumpage is not sufficiently heavy to do this. Furthermore, as the Silurian dolomite is not particularly productive in this area, due to the presence of several shaley zones in the rock here, increased pumpage is not anticipated. There is also no opportunity for leachate to migrate downward into the deep sandstone aquifers.

When the water level within the lagoons is diked above river/canal level, this water will move laterally and downward through the confining dikes toward the Sanitary and Ship canal. The dikes are composed of fill materials of various components, including a fair percentage of clay. This clay material is effective in attenuating pollutants by ion exchange so that contaminants moving through the dikes will be greatly reduced in potency. Upon entering the Ship Canal, the pollutants will then of course be further diluted in the surface flow.

In summary, I feel that because the sludge lagoons are located in the center of the natural ground-water discharge zone of the Des Plaines River Valley, there is no potential for leachate from these lagoons to enter the ground-water reservoir in the area. Small quantities of pollutants do migrate from the lagoons through the dikes into the Sanitary and Ship canal; however, these contaminants are neutralized in strength by ion exchange in the clay dikes. Furthermore, when they enter the Ship Canal, the contaminants will be highly diluted in the flow of surface water that moves past the site.

Yours truly,



Jean I. Larsen

Associate Geologist


Hydrogeology and Geophysics Section
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This site is not fenced in, nor are there provisions to retain run-off. A ditch is located to the east of the site along Doty Avenue. This ditch is know to be tributary to Lake Calumet.

The next site visited is know as the Skokie NU-EARTH Distribution Center, and is locatd to the north of the North Side Sewage Treatment Works south of Oakton Avenue near St. Louis Avenue. Several persons were present at the site collecting the sludge, (see photos # 11 and #12). A dozer was grading the material at the time (see photo #13). Mr. Calson picked up a handful of the material to take a photo, which is #14. To the south of the pickup site is located very large stock-piles of the material (see photos #15 and #16). The entire area is well fenced in, however there are no provisions to retain run-off. Run-off would possibly find it's way to the North Shore Channel, however this could not be determined.

Finally a municipal pickup site located in the Village of Oak Park was inspected. It is located in the parking lot of the Department of Public Works located at 634 North Blvd. The material is located in the corner, and is fenced in. Run-off would most likly drain into the parking lot sewer, which is a combined sewer. No photos were taken.

A list of the communities receiving NU-EARTH is attached.



Michael J. Schmitt, Environmental
Protection Engineer

MJS:mjs

CC - Records Unit, FOS/DWPC

Darryll Bauer, Permit Section, DWPC